



Early Penn R. R. block signal station in Jersey from a drawing.

(New Jersey probably had a more important role in the establishment and development of railroads than any other state in the country. This article, the eighth of a series, deals with the adoption of safety measures and devices on early railroad lines in the wake of mounting employee and passenger traffic accidents.)

THE public? What about the Public, always complaining about the railroads? Vanderbilt's right—the public be damned! This is an age of money men, mister, and don't you ever forget it!"

The voice of the Robber Barons was heard o'er the land, particularly up state on the poor, hopelessly-broke Erie. What Daniel Drew, Jay Gould and Jack Fisk did to that railroad 80 years ago shouldn't have happened to a stage coach route, and the public was swelling its voice in protest.

Not confined to the Erie by any means were the complaints. Editors throughout New Jersey were grumbling about the accidents which had been on the rise on every railroad since the 1850s. Railroad workers were being killed or maimed in their daily struggles with poorly kept or

outdated equipment. Safety devices were thought by many railroad heads to be a thing for foolish sentimentalists.

Somehow, though, when men gathered in the waterfront taverns the talk was always of the Erie.

FIRST, they had discussed with great excitement the building of the country's then greatest railroad from Piermont on the Hudson River to Dunkirk on Lake Erie. The first through train on the Erie in May, 1851, gave just cause for talk.

"Longest railway in the world outside of that one in Russia between Moscow and St. Petersburg . . . They

say President Fillmore and Daniel Webster rode that train all the way to Dunkirk . . .

"Yes, and Daniel sat on a flat car all the way—the better to admire the scenery and the better to rise and rumble heartfelt praises for the Erie, the world and New York scenery every time the train stopped. No wonder his throat was sore when the train reached Dunkirk!"

"A wonderful railroad, that Erie. Tracks six-feet wide . . . Nice and comfortable . . . Odd, though, they should build so big when every one else is building only four feet, 10 inches wide. That'll cost them plenty when they connect with anybody else . . ."

BY 1852 the connection for and through New Jersey was made at Suffern, N. Y., by way of the Paterson

& Ramapo and the Paterson & Hudson River railroad and the Erie ran into Jersey City. The Erie management laid another rail, to permit its extra-wide cars to travel over the new right-of-way (and it cost plenty, incidentally, to change to standard gauge 30 years later.)

New Jersey now began to know the trouble which dogged the Erie. Accidents seemed to be its unceasing lot, so much so that in 1852 a Paterson paper's headline read:

A COLLISION! WE'RE GETTING USED TO THEM NOW!

Many disasters occurred where the six foot gauge Erie tracks met the narrower tracks of the New Jersey Railroad at Marion, just west of Bergen Hill. Switch tenders couldn't tell which railroad train was coming and sometimes they guessed incorrectly and upset a train or two. Things got only slightly better when the piping on the N. J. R. R. was painted red and the Erie carried a light by night.

THEN there were nights like May 21, 1853, when the nightly Erie emigrant train for the West pulled through Bergen Cut. The conductor held the train three minutes at Marion, then decided the down Erie train had forfeited its right to the track. The emigrant train started toward Paterson.

A mile beyond the cut the eastbound Erie express collided head-on with the emigrant train on the single track. Two trainmen died but none of the panic-stricken passengers was fatally injured.

They questioned the conductor of the emigrant train. "How was I to know we were running on a new schedule?" he asked. "I was running on the old!"

Jersey City became alarmed and passed an ordinance limiting the speed

'Robber Barons' VS. The Public

Photos and Illustrations from Railroad Magazine, Newark Public Library, New Jersey Historical Society, Thomas T. Taber and Walter A. Lucas.

of locomotives in the city to six miles an hour. Still the accidents went on as trainmen forgot to wind their watches, ignored warning lights or scoffed at men stationed in Bergen Cut to watch the tracks.

THE Erie nevertheless pioneered many safety measures and an Erie man, the redoubtable 300-pound "Pappy" Ayres, established the right of a conductor to control the train. Pappy hung a stick of wood in the engineer's cab and attached a long piece of rope to it so he could signal the engineer when to start and stop by bouncing the stick.

The engineer threw the stick away.

worst railroad accidents up to that time.

The engineer of the westbound C. & A. train passed a turnout at Burlington when suddenly he realized a northbound train was due. He threw the train into reverse and backtracked for the turnout. At that moment a team of horses started to cross the track. The rear car of the train was derailed as it struck the team. Other cars jumped the tracks. In the midst of the dreadful confusion rescue workers counted 24 dead and 100 injured. Fortunately the eastbound train was halted in time to prevent further carnage.

Public indignation clamored for an

Some Profit-Greedy Tycoons Thought Safety Devices Unnecessary Until Outraged Public Forced the Issue

BY JOHN T. CUNNINGHAM

Pappy replaced it. The engineer took it down. Pappy waited until the next stop and then soundly thrashed the engineer. Thereafter, the stick stayed until replaced by a gong and one might even say that today's air signal cord owes its existence to Pappy Ayres of the Erie.

Another Erie man, Superintendent Charles Minot, was the first to use the telegraph in controlling the run of a train. Since the telegraph became basic in all safety devices up until the end of the 19th Century the more's the pity the Erie couldn't capitalize on its head start.

PART of the trouble lay with the superseding of Minot as Erie superintendent with Daniel Craig McCallum, artist-poet. Appalled by the Erie accidents, McCallum in 1854 drew up a set of safety rules, including the one that required a red ball to be hoisted by day and a red light by night to show that the west bound train had not passed a given point.

McCallum had good intentions. Unfortunately, his rules placed the entire burden on the engineer. Immediately the engineers struck. Years of unpleasant labor-management relations followed. There was sabotage; engines began to deteriorate rapidly, often because engineers forgot to check water levels in the boilers. Things got so bad that Paterson papers warned passengers not to ride the Erie during the strike.

More labor trouble followed when the Erie started to blast its tunnel through Bergen Hill in 1856. Before the tremendous project was finished in 1861 the Erie was bankrupt and 57 workers had perished beneath the hill.

TROUBLES, troubles, nothing but troubles on the Erie. Enough to divert attention from the terrible wreck on the Camden & Amboy Railroad in 1855, one of the country's

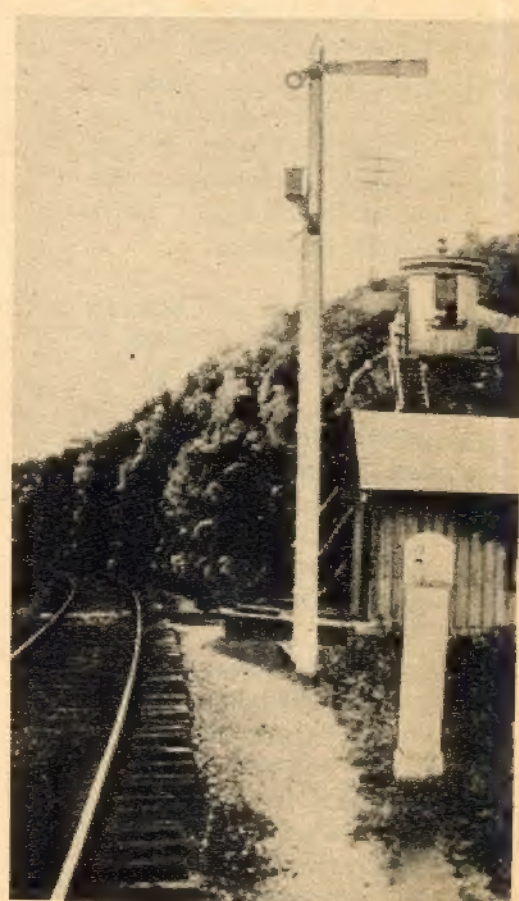
investigation. The C. & A. put its company-minded investigators to work and reported that the entire fault lay with the driver of the team! A bill was introduced in the Legislature requiring railroads to observe some safety measures, but the railroad lobbies defeated the measure.

THAT excitement faded as new Erie railroad talk came along. Daniel Drew had lent the railroad almost \$1,000,000 to help build the Bergen Tunnel. All Dan'l got in return was appointment in 1857 as the railroad's treasurer, something akin to putting a three-year-old to guard the lollipops.

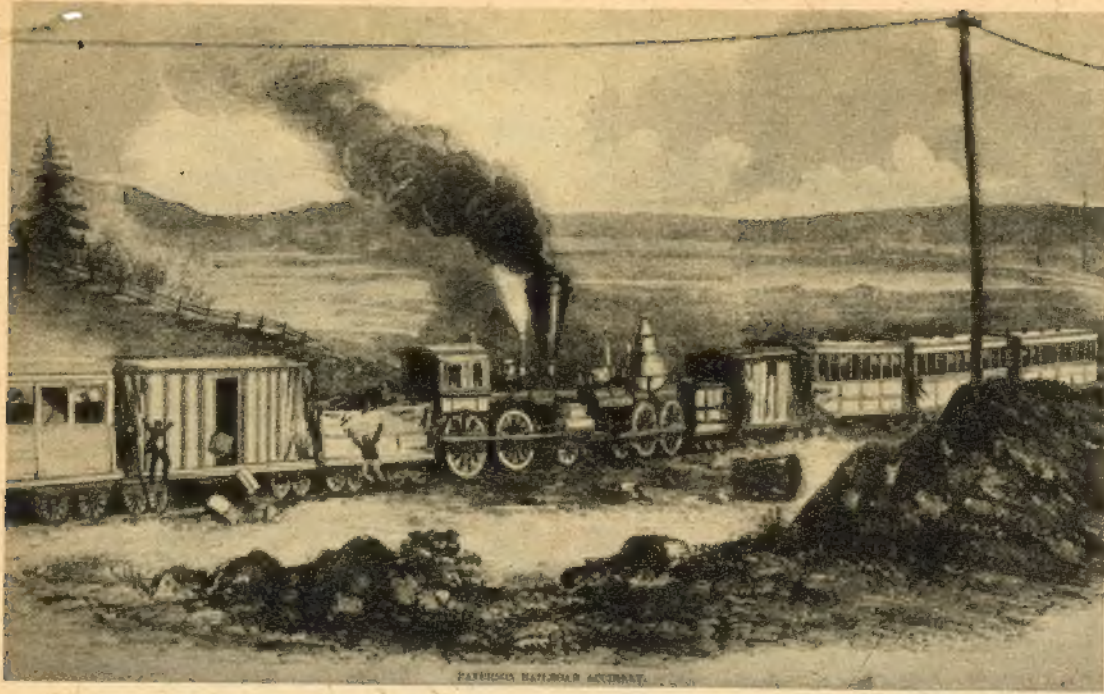
These were railroading's saddest



Old-type ball signal from which originated the railroad term of "highballing" for "keep going".



First automatic semaphore was this signal installed in 1893 by Jersey Central near Phillipsburg.



Erie emigrant train wreck near Paterson in 1853 from a woodcut.

days. Drew, whose biographers have never been able to lend him physical charm or detract from his fiscal rascality, ran the Erie treasury into the ground. Coincidentally, his personal holdings rose, until by 1867 he was a millionaire many times over.

He was rich enough in that year to begin thinking about how he was going to get into heaven. He made a gesture in that direction by founding a seminary in his name in Madison in 1867, the same year that he brought Jay Gould and Jim Fisk into the Erie.

Mr. Drew was bad enough. With Gould and Fisk to help him the Erie was in for even sadder days.

IN New York, Cornelius Vanderbilt also had his eyes on the Erie and in 1868 he decided on a showdown with Drew. How Drew balked Vanderbilt's attempt to purchase a controlling interest in the road by printing new stock as fast as Corny bought it is a well-known sordid story. A writer of the day declared that "every kind of knavery, bribery, fraud and corruption highlighted the Drew-Vanderbilt battle." Judges were bought and sold. Tammany Hall wove in and out of the clash. Finally Uncle Dan'l and his cohorts fled to Jersey City with a substantial slice of the Erie treasury in their bags and Vanderbilt sued for terms.

Needless to say, the terms were at the Erie's expense.

Then, Drew, Gould and Fisk got snarling among themselves and Gould and Fisk turned on poor, skinny Dan'l. Between them they caught him in a stock corner and left him penniless (unable even, they say, to make good on money promises to

Drew Seminary). Gould and Fisk saddled the Erie with even greater liabilities, the worst of them being the scandal which hung over the unfortunate railroad for decades, no matter how hard it tried to improve.

NOW to the Philadelphia & Trenton Railroad, and one of the most compelling wrecks in railroad history, because it helped pioneer the block signals in use today.

This involved two troop trains bound from Philadelphia to New York, on the line linking the Camden & Amboy between Philadelphia and Trenton. One crashed into the rear of the other on March 7, 1865 at Bristol, Pa., killing six and wounding 40. The accident shook the East, but above all it disturbed one Ashbel Welch of Lambertville, vice president and engineer of the Camden & Amboy.

Before the troop train crash the usual system of stopping trains had been simply to wire back if a train did not pass a station when it should. If the operator happened to doze off or if the telegraph apparatus didn't work or if the operator misread a message the possibilities of rear-end collisions were great. Some experts, including Welch, felt the danger was increased.

Welch decided as early as 1863 to reverse the process. His principle was that no train should enter a block (a designated mileage of track) until notified it was clear, instead of proceeding unless a red light was shown. Thus, even if the telegraph operator failed to get a signal from ahead no following trains moved until engineers got the all-clear.

Welch's system was simplicity in



Emergency stops were commonplace in pre-signal and airbrake days and this early sketch shows engineer throwing train into reverse in response to warning of man running along trackside.

itself. It consisted of a box set on a post, with a white surface showing (a white light at night). As soon as a train passed a signal station a red flannel banner was dropped across the white surface (or white light) and it remained in place until telegraphed word was received that the block ahead was clear.

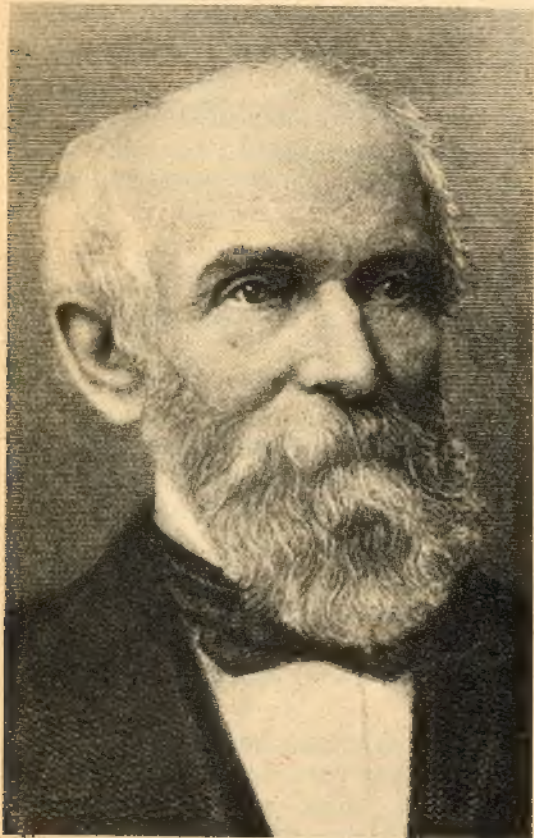
The system was extended as far as Jersey City in 1867 and by 1876 it was in operation between New York and Philadelphia on the Pennsylvania's main line, in time to permit the Pennsy to move huge volumes of traffic for the nation's Centennial celebration.

New Jersey further contributed materially to railroad safety when the world's first automatic semaphore signal—motor operated—was installed in 1893 at Black Dan's Cut, near Phillipsburg.

Soon after he devised his block system Welch was at work on another vital safety device—the interlocking switch system, which worked all switches and signals at a junction. Welch first installed the system on an experimental basis "on the top of the hill" where the Bordentown line hit the main line at Trenton. Welch's newest device meant that trains could safely approach an interchange without fear that switches would be improperly set. Setting one switch locked all others in place. Incidentally, the nation's first permanent interlocking system was installed by the Pennsylvania in East Newark in 1875.

MEANWHILE, throughout the railroading world, George Westinghouse (Union Army veteran) was attempting to interest railroad officials in his

(Continued on Following Page)



Ashbel Welch of Lambertville, C. & A. engineer, devised manual block signal around 1863.



Artists' conception of a Camden & Amboy derailment in 1855 when train backed into a team of horses.



Private car of Jay Gould, line president, pictured on Erie siding in 1870's. The financier is in center of figures on rear platform.



An end to the Lackawanna's reliance on "men who know to run a railroad" occurred in 1894 when the line's "South Orange Accommodation" rammed into the rear of a Dover train during a fog on the Meadows. The above sketch was made by an artist who visited the scene of wreckage in which 11 persons died. Shortly thereafter, the road installed the first of its automatic block signals at Brick Church, shown below before tracks were elevated.



MAKING RAIL TRAVEL SAFE

(Continued from Preceding Page)

air brake, and Eli Hamilton Janney (Confederate veteran) was trying to get some one to try his automatic car coupler.

When Westinghouse returned from the Civil War in 1865 the nation's railroads were strewn with ineffective means of controlling speed. He filed his first claim for an air brake patent in 1868 and two years later started to manufacture it, but it took 20 years before its use was universally accepted. Railroad authorities agree that without the air brake trains would have had to struggle along with 20-ton locomotives, 10-ton passenger cars, 15-car freight trains and 30-mile-per-hour speed limits. Westinghouse literally freed the railroad from its 30-year-old shackles.

Janney's coupler was tested on the Pennsylvania and made a part of that railroad's equipment by 1876, but by 1890 more link-and-pin couplers were in use despite the spreading adoption of the automatics. The turn of the century saw the end of link-and-pin couplers.

STILL, according to Stewart Holbrook, railroad historian, railroads of the 1870s "were a law unto themselves," with workmen the innocent pawns. Laws of the day made railroads exempt from injuries to their workers. Harper's Magazine in 1874 commented:

"As long as automatic couplers cost more than trainmen we may expect the present sacrificial method of car coupling to continue."

Mr. Holbrook also pointed out that every time a financial recession hit the country the railroads lapsed into shoddy operation, although stock dividends remained at 8 to 10 per cent levels. One sure way to keep dividends high was to cut wages—and the resulting strikes of the 70s, many of them bloody, were inevitable.

FINALLY the country rebelled and the result was the Inter-State Commerce Act of 1887 and the Railroad Safety Appliance Act of 1893. The railroads insisted they had long since policed themselves—yet, when the 1893 law was passed, the rate of employee accidents fell 60 per cent in a single year.

Early New Jersey railroad lore lists

some unique policing methods used by railroads to prevent accidents.

Take the one on the New York, Susquehanna and Western Railroad in 1872, for example. One of the line's trains went through the Saddle River bridge and President C. A. Wortendyke ("a man of tender feelings who utterly abhors the very mention of a railroad disaster") decided to test all bridges.

It was a test of the most direct sort. The railroad's top officials—and, perish the thought, the press—were loaded on a company locomotive which was run out on the bridges. Then another locomotive was run out behind it and the bridge sag noted.

AT Weasel bridge over the Passaic an extraordinary test was made. In addition to the two locomotives, two cars loaded with gravel "atop which sat the laborers, a funny-looking set of Danes, Swedes and Russians" were hooked on. The two locomotives, gravel cars, laborers, officials and reporters all "rushed across the bridge at great speed." The test "proved the bridge as solid as a rock."

Significantly (or perhaps coincidentally) the bridge was nevertheless ordered strengthened.

One of the last railroads in the state to adopt comprehensive signalling methods was the Lackawanna. Its procrastination was due to the fact that it considered its line had "sober, capable engineers." The assumption of accident-free operation was sound—the Lackawanna had not had a passenger fatality in 40 years of operation.

A DENSE fog rolling in from the meadows on a January morning in 1894 put an end to sole reliance on "men who know how to run a railroad." On that misty morning the Dover Express slowed down near the Hackensack River drawbridge because of the thick fog. The South Orange Accommodation, highballing along, rammed the rear of the Dover train and 11 dead and 35 badly injured were taken off the Hackensack Meadows before the awful morning was called done.

Within a month demands of an outraged public forced the installation of automatic block signals, to supplement the unquestioned good judgment of the Lackawanna's "cold-water drinking engineers."

Next Week: The Little Lines